Phil Winsor's Eighth Degree of the Yang Ch'in and Showers of Flowers

An examination of Process and Development

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ABSTRACT

Phil Winsor (1938-2012) worked as a composer, educator, author and visual artist. During his last creative period, Winsor turned his attention to producing computer music videos and multi-channel works. This paper examines "Eighth Degree of the Yang Ch'in," an 8-channel work; and "Showers of Flowers," a computer music video that uses the Yang Ch'in piece for its soundtrack. This paper intends to provide an insight into the working methods used by Winsor to bring his concepts to realization. This includes the processes and materials that Winsor developed for these works, the micro and macro aspects of the musical structure and the conversion of the multichannel work into a video soundtrack.

1. INTRODUCTION

Eighth Degree of the Yang Ch'in is an 8-channel electronic work composed by Phil Winsor in the Fall of 2005. Concurrently, Winsor was generating a fractal-based video for an intermedia work titled *Showers of Flowers*. Computer music videos had become the prime area of compositional interest in his last creative period. During this time, he reimagined several earlier instrumental works as computer music videos. The music of *Eighth Degree of the Yang Ch'in*, while remaining a multi-channel electronic work, became the soundtrack for *Showers of Flowers*. It is impossible to say if the "dual-purposing" of this work was the original conception or if it developed as the two projects began to evolve.

The Yang Ch'in is a hammer dulcimer that originally made use of bronze or silk strings. In modern times, the strings are composed of steel alloy which gives the instrument a brighter timbre and greater volume. The instrument is played with rubber-tipped bamboo beaters. Either the bamboo side or the rubber side of the beater may be used to alter the tone. The instrument may be plucked using the end of the beaters and glissandi can be accomplished by

Copyright: © 2022 First author et al. This is an open-access article distributed under the terms of the <u>Creative Commons Attribution</u> <u>License 3.0 Unported</u>, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. running the beater on the string. The instrument may be used in an ensemble to provide harmony (special beaters allow for four notes to be played) or as a solo instrument.

At this time in his career Winsor was splitting his academic year between the University of North Texas at Denton (UNT) and National Chiao Tung University (NCTU) in Hsinchu, Taiwan. While spending part of the academic year in Taiwan, one might expect that the material for this work was recorded there. However, this was not the case. It was at the Center for Experimental Music and Intermedia (CEMI) at UNT that Winsor recorded the material for the work. In the program notes for *Eighth Degree of the Yang Ch'in* Winsor states,

"A former composition student of mine, Fei Wu, devoted several hours to a recording session in which I asked her to generate audio samples of my specification." [1]

These recordings provided the audio material, that, through a multitude of transformations, would yield the finished work.

When generating material for a piece Winsor would often partner with the performer to explore the sound making capabilities of an instrument beyond the traditional techniques. This allowed Winsor to hear the results of extended techniques immediately while consulting with the performer, thus ensuring that the techniques were performable. This is less important in an electronic work but Winsor employed the same method for electroacoustic works like *Asleep in The Deep* for tuba and tape. In the Yang Ch'in recordings, Winsor was impressed with what he described as "the wonderful ring-through textures that emanate from the instrument and seem to float on forever." [2]

2. METHODS

2.1 Work Disks

When in Taiwan, Winsor generally worked on Wintel laptops using external hard drives for additional storage (as the internal storage capacity of laptop hard drives of the day were small) and backing up his work on CD-R and DVD-R disks. His DAW of choice was Adobe Audition, which at the time, would have been versions 2 and 3. Version 2 marked Adobe's corporate commitment to Audition, adding several features that improved upon its progenitor Cool Edit Pro. One of its greatest strengths was (and is) the convenient movement between multi-track sessions and wave file editing. The user may click on a wave file in the muti-track mode and instantly see the wave file in the editing mode. After any desired alteration or processing of a wave file, it may be saved as a new file and immediately inserted into the multi-track session. The original wave file may be kept or replaced in the session but it will remain in the audio pool. The upside to this is that all of the files that are a part of the compositional process may be kept in one pool. The downside is that the pool can become quite large and unmanageable. On computers of the day a large session might take several minutes to load the pool and populate the session from a CD-R. Winsor made use of this capability and created large, but organized, audio pools during the development of a piece.

As a result of his extensive use of backup disks Winsor left a large library of work disks for his audio and video compositions. These disks have been catalogued by the author but this paper reflects the first attempt to examine the evolution of a work through multiple versions found in Audition sessions. There are 10 CD-Rs catalogued as Audio Source disks (AS) that pertain to *Eighth Degree of the Yang Ch'in*.

A brief look at the most pertinent work disks follows:

Audio Source Disk 51 (AS-51) contains two folders:

New Yang Chin Piece, dated 11/02/2005, which contains 110 wave file samples (189 MB) and 1 Audition session.

Yang Chin samples, dated 10/30/2005, which contains 9 processed samples and 7 Audition sessions. These sessions span 10/30 to 11/02 2005 and the beginning of each is titled "RingThruYangChin" with additional attributes appended to each title, such as "RingThruYangChin WithPan3InProg." These descriptors indicate what the focus was for any given session.

Most importantly, this disk contains 34 tracks of the original recordings which are, of course, the sample source. These tracks contain multiple instances of single pitches, tremolos, glissandi, extended performance gestures, idiosyncratic gestures and microtonal samples. These tracks carry no descriptive titles and are merely numbered (Track 1, Track 2, etc.) These tracks would need to be split into the individual "original" samples that would then be processed. Because there are processed samples found in both folders, one can assume that the presence of the original tracks was intended as a backup.

The sessions on this disk display sample groups laid out across a multitrack session (utilizing 4 or 5 channels) spanning a time of 40 minutes. Winsor is using Audition as a "movable sketch pad." He organizes samples into the desired group and is free to move them around the time grid. Combining, layering samples and rearranging orders allows Winsor to develop a motive-based, precomposition taxonomy and a virtual "sounding" workbench as a replacement for the venerable sketch book (See Figure 1.). AS-54 contains the second version of the work. The audio pool has expanded to 541MB with almost 600 wave files in the audio pool. This is the most complete listing of samples and their variants that Winsor considered for inclusion in the work.



Figure 1. Audition session organized by sample groups.

AS-58 (1) contains the fifth and final version of the work which is configured for 8 channel output. Notably, this disk contains a stereo mixdown of the 11 audio tracks that comprise the piece.

AS-58(2) and 58(3) contain the wave files for 8-channel and 4-channel versions of the work.

2.2 Sample Taxonomy

As in the naming of sessions, Winsor was also descriptive in his labelling of wave files. For instance, ArpeggCLIP, ArpeggCLIP(2), ArpeggCLIP(2.1), etc.. This indicates an arpeggiated sample, clipped from the original track and the numbers indicate copies and variants. This naming convention makes it easy to compare various processed files. He also indicated "MUSIC" as an additional term: ArpeggCLIPMUSIC1. The author believes that Winsor's use of this term in other sound design projects indicates manipulations of the sample that yielded an output that Winsor deemed as rising to the level of "MUSIC."

2.3 Sample Processing

In the program notes for *Showers of Flowers*, Winsor describes the processes applied to the samples.

"The techniques I used were simple ones, ranging from time/frequency shifting to multiple loop overlays and composites, microtonally shifted, repeated samples to create a drone effect." [2]

Audition performs the application of most of the aforementioned techniques quickly and easily. The techniques involving time shifting and frequency shifting are employed most frequently. Audition has a processor named "Stretch" which allows for time stretching and pitch shifting. Options included the ability to apply either process separately or to apply both processes simultaneously. This processor also provides for either a Constant Stretch or a Gliding Stretch which allows for change across time. This feature provides extremely expressive pitch shifting. One preset of this processor is titled Helium which is a term that Winsor uses as a descriptor for samples: PizzClip1 HeliumShiftMusic. This is an obvious connection to this processor in Audition.

Pitch shifting brings the ability to "transpose" samples melodically and combine samples to create sequences. Winsor would combine short samples with pitch shift on each to create a linear entity that he would label as "MUSIC." A notable motif from the opening section uses this technique to craft an easily identifiable melodic sequence. Because of ease of creating a new sample from melding, or splicing and reassembling, it is not initially evident that this took place at all. However, when aurally examining the source tracks, it is easy to pick out individual samples that have been recombined and manipulated. When comparing the rather pedestrian sound of many of the source tracks to the processed samples used in the work, it is apparent that Winsor was a master of digital sound design and processing, building upon and expanding the tape techniques that are found in his earlier works with current processing techniques in the digital realm.

There is also evidence that convolution synthesis and granular synthesis were applied to the samples. Convolution was added to Audition 3 with the capacity to use external impulse files but for granular synthesis Winsor often made use of a stand-alone application: GranuLab by Rasmus Ekman. In the audio pool of the final version there is only one sample marked CONV which is his usual method to indicate the use of convolution. There is no typical naming convention for GranuLab but the aural evidence of the application granular synthesis is clear on several of the lengthened samples. Winsor makes minimal use of looping in this work: it is restricted to one section of the piece and while Audition makes it easy to meld two samples to form a new sample, the "compositing" he mentions in the program notes is not apparent in his file naming scheme. The microtonal aspect mentioned in the program notes is in the source recording by "mis-tuning" the Yang Ch'in and not due to any processing in Audition.

Even when allowing for copies that carry different names, the sheer number of samples is daunting. Version 2 has almost 600 samples and the final version (5) has 243 files in the Audio Pool. The piece utilizes over 200 samples (this includes repeats of samples). Even with the convenience provided by modern software, the amount of slicing and splicing necessary to go from the original tracks to the processed samples utilized in the work seems formidable.

2.4 Mixing Automation

Winsor utilizes volumes and pan envelopes which allow him to automate those elements. There are only a few places where panning is automated but many samples make use of the volume envelope to create fades in and out. There are few pan envelops employed because Winsor used the placement of samples on specific track with specific outputs to create the 8 channel panning scheme. This is evident by the names of different Audition sessions including a descriptor for a pan: "RingThruYangChin WithPan3InProg." Winsor seems to be content to create samples in the audition editor and "mix" the samples in the multitrack window. While Audition contains a virtual mixer and VST plug-in support, there is no indication in any session that Winsor made use of mixer automation or in-line processing. In this composition it is likely that the multi-channel conception and realization trumped the need for individual track processing which is more typical of commercial stereo approaches.

2.5 Spatial Placement

To realize the 8-channel version, Winsor created four stereo pairs with specific panning for each pair. The adoption of such a scheme allows for Left-to-Right spatial movement for any stereo pair. The disadvantage is the inability to easily "move" a sound from front to back on one side or vice versa. Winsor adheres to the most standard speaker assignment for 8-channel reproduction. From the earliest version of the work, the placement of a sample, its copies and variants, on adjacent audio tracks is evidence that Winsor was aware of the sample placement in terms of its dispersion into eight channels. The 4-channel version is created by reducing the output into two stereo pairs.

There are 11 tracks of audio in *Eighth Degree of the Yang Ch'in* and the audio for 8-channel performance is organized as follows:

Left-Right 1	Tracks 1 5 9
Left-Right 2	Tracks 2 6 10
Left-Right 3	Tracks 3 7 11
Left Right 4	Tracks 4 8

The 4-channel version is organized as follows

Left-Right1	Tracks 1 3 5 7 9 11
Left-Right 2	Tracks 2 4 6 8 10 11

Audition could have been used to create 4 stereo subbusses that could be output to a multi-channel audio interface. However, for the "portability" of an 8-channel piece, providing wave files that can be dropped into any DAW and performed through a properly configured system is the most efficient way to present the work. Most commercial DAWs allow for 5.1 surround recording but do not support 8-channel audio configurations. A notable exception is Reaper which has become a favorite for preparing 8-channel pieces.

3. MUSICAL ATTRIBUTES

The following quote from Trevor Wishart's text *Audible Design* can be applied to Phil Winsor's compositions [3].

Compositional Assumptions:

1. Any sound whatsoever may be the starting point for a musical composition.

2. The ways in which this sound may be transformed are only limited by the imagination of the composer.

3. Musical structure depends on establishing audible relationships among materials.

3.1 Source Material

The original 34 Yang Ch'in tracks were recorded in stereo and are varied in content. A number of tracks contain a series of individual pitches or two and three note figures. Several tracks feature tremolos and glissandi while others contain gestures that are easily recognized, upon listening to the piece. There was no apparent use of time-based processors on the original recordings. Winsor was impressed with the reverberant quality of the undampened instrument and since he knew that he would be processing individual samples, sometimes heavily, it makes sense that he left the original recording unprocessed or "dry."

3.2 Structure

"There is an idea, the basis of an internal structure, expanded and split into different shapes or groups of sound constantly changing in shape, direction, and speed, attracted and repulsed by various forces. The form of the work is a consequence of this interaction. Possible musical forms are as limitless as the exterior forms of crystals." -Edgard Varese [4].

Winsor describes the form of *Eighth Degree of the Yang Ch'in* in his program notes for the work:

"The work is episodic in format, but only because the materials seemed to be self-organizing. That is, after many hours of digitally modifying the original Yang Chin samples using a number of audio transforms and effects, the music seemed to take shape of its own accord...The materials themselves seemed to dictate their placement in the overall texture, resulting in an episodic formal design. [3]"

This information combined with the evidence of sample placement across a broad time canvas, as mentioned earlier, and the ability to aurally peruse samples in Audition's audio pool verifies the episodic nature of the work. While episodic, the work, at the sample level, is more organized than Winsor allows in his program notes.

3.2.1 Macro-structure

10" to 1'20" Section 1

1'20" to 1'43" Transition

1'43" to 3'41' Section 2

3'41' to 3'56" Transition

3'56" to 6'40" Section 3

6'40" to 7'15" Transition

7'15" to 7'20" I Feel Good Quote

7'20 to 9'34" Section 4 ("angry" entrance of Yang Chin)

9'54" to 10'40" Coda (Opening material restated.)

Figure 2 is a session display of the entire work.



Figure 2. Audition Session of complete work.

3.2.2 Sections

10" to 1'20" Section 1

The opening section of the work is expository and begins with three glissandi gestures.

This section makes use of several **ArpeggClip** samples and **Track33ClipSharpAttack** samples. The sequential **ArpeggClipMUSIC4(3)** is heard three times with one overlapping occurrence. The slower version of the sequence **ArpeggClipMUSIC1(4)** is the most recognizable sample of the work. The motivic integrity of this opening is striking with the three opening gestures presented on three channels.

1'20" to 1'43" Transition

The transition introduces the **PercMotif1(4)** and the **PizzTreomo4(3)** samples. The **PercMotif** sample will be used in every transition. A decrescendo in the **Pizz Treomo** leads to the next section with an ever-so-brief pause.

1'43" to 3'41' Section 2

The second section begins with an almost impressionistic sounding **PizzClipHeliumShiftMusic15** (2.2) sample that is followed by overlapping variations (10) of the**PizzClipMusicNew** sample and variations (6) of the **PizzClipHelium Shift** sample. Then audio is presented in the four front channels. In this section it is easy to hear how the variants of the same sample provides variation while deepening the motivic connection of the material.

This section also provides an opportunity to examine how Winsor handles the "tempo" of the multi-track session in Audition. This piece was realized before global time stretching capabilities for multiple tracks of a session was possible. Since the session is unfolding with one master clock Winsor turns to the interior tempo of the material in the sample itself. The result is a surprisingly supple and quite effective.

3'41' to 3'56" Transition

The second transition begins with a statement of the **PercMotif1(4)** sample and the first appearance of a **Mixdown(2.2)** sample, which fades in from nothing and is looped to continue into Section 3. The first statement of the Mixdown sample provides an effective underscore to the fading **PercMotif**; its repeat, combined with a gradual crescendo, leads to Section 3 where it continues as the first of several drones.

3'56" to 6'40" Section 3

Section 3 is the only section of the work that makes use of loops. Several tremolo variants (PizzTreomo 2(3) and 4(3), KnockingPercTrem(3)) pitch shifted to different ranges provide constant background to support the entrances of additional variations of the Knocking PercTrem, PizzClipMusicNew, and PizzTrem samples. The GlissMontage2 sample is heard for the first time and is one of the few samples that uses pan automation to move from left to right in Channels 5 and 6. As the GlissMontage fades the KnockingPercTrem continues as a drone that underscore the entrance of DrunkMusic1(3) and 3(3) with the only statement of the Quack1Music17b(3) sample. Although there are 20 variations of the Quack sample in the audio pool, this singularity is its sole appearance in the piece. The Tremolo loops fade in as this section ends with the return of material from the expository section:

New material is played over the drones with previous heard material returning at the end of the section. The end of this section is marked by the return of the opening gesture from section 1: **ArpeggClips**, placed on three channels in close time proximity that creates a chorusing effect. As the Tremolos fade away the section closes with two variants of the **Pebble1Music** sample.

6'40" to 7'15" Transition

The **PercMotif** once again begins the transition. A restatement of the **GlissMontage** sample provides a drone background under several variants of **PizzTreomo** and Mixdown samples. The transition ends with two overlapping **PizzChord** samples that decrescendo.

7'15" to 7'20" I Feel Good Quote

The use of a signature quote from James Brown's *I Feel Good* is frankly odd, but creates a surprise moment in the midst of the resonant textures of the Yang Ch'in. Winsor truly enjoyed the audience response created by this quote. "*I Feel Good*" was not the only quote considered. **AS-56** has a file called YEHAW (an exultant cowboy holler) not seen on any other "collection" of the samples. It also contains a sample "Uh-oh" in a child's voice. Of these three available choices, the sample from *I Feel Good* creates the most disruptive effect. The swift return of the Yang Ch'in seems almost angry in presentation. The length of the sample is reduced in Version 5 of the work which heightens the effect of the speedy return of the Yang Ch'in. The use of musical quotes was not new to Winsor; he had used quotes in previous works, most notably *Melted Ears* with quotes from Classical piano works fashioned into a piano duet.

7'20 to 9'34" Section 4 (Climax at the Golden Mean)

This final section contains the climax of the piece and, not surprisingly, has the greatest number of samples. 122 samples are used in this last portion of the work. It begins with the almost "angry" sounding return of the Yang Ch'in using 2 variants of Track33ClipSharpAttack samples. Variations of this sample dominate this section: there are 156 variants in the audio pool and 50 samples are used in this section. Track33ClipSharpAttackSamples are attacked simultaneously; others are rhythmically offset. The overlapping and panning create the climax which maintains its intensity for over a minute and begins to recede with the PizzChord and PizzMotif samples that leads to the final portion of this section. An additional statement of Track33ClipsharpAttack samples lead to the first appearance of the ScrapingSwirl2(3), 3(3), 4(3) samples and, as in the final moments of Section 3, statements of Pebble1Music lead to the Coda.

The Golden Mean would dictate that the climax of *Eighth Degree of the Yang Ch'in* should occur at the 7' 25" location. This is immediately after the *I Feel Good* quote and is the area of the greatest activity with the audio surrounding the audience on all 8 channels. When Winsor uses a climactic gesture, it is not unusual to find it conforming to the proportions of the Golden Mean. The authors analysis of Winsor's *Il Passaggio Spaziale* displayed the same concern with macro-structural proportion in an intermedia work. [5].

9'54" to 10'40" Coda

The coda begins with overlapping entrances of **Pizz Treomo** samples which give way to the restatement of the opening gestures and the familiar sequential sample (**ArpeggClipMUSIC1**). A number of overlapping **Track 33ClipShaprAttack** variations combine with the **Pizz Chord5** sample to conclude the piece.

3.3 Spectral Observations

A spectral examination of the piece was undertaken with Steinberg's SpectralLayers 8 which allows the audio file to be broken into three component parts: the transient spectrum, the tonal spectrum and the noise spectrum. In this software the discrete components are presented as tracks extracted from the audio file. The transient layer, which displays the initial transients of the work, reveals the harmonic richness of the almost instantaneous attacks. It also indicates the broad frequency content of the "noisier" attacks of the instrument (Figure 3a).

The tonal layer displays the frequency range of the tonal components of the file, which, at certain moments in the piece, display the component parts of the overtone series quite clearly. In the climax of the work, which has many



Figure 3a. Transient Spectrum Layer

overlapping samples, displays the broadest frequency range in the work. It also displays more low frequency material in the right channel than in the left. This is consistent throughout the work. As a result, it also increases the amplitude of upper harmonic components in the right channel as seen by the heavier lines in the right channel (Figure 3b).



Figure 3b. Tonal Spectrum Layer

The noise layer displays the idiosyncratic performance noise of the instrument and, not surprisingly, it has frequency material that exceeds the 20KHz range. The density of the noise is greatest in the climatic section. This section also has the greatest concentration of low and mid frequency noise. At 4' 10" the overlapping samples create a swirling "noise wash" which initially catches the eye because of the sustained nature of the noise displayed in the track. Upon listening, the ears verify the eyes: it is aurally quite interesting (Figure 3c).

4. COMPUTER MUSIC VIDEOS

In his last creative period Winsor became interested in computer music videos. He had a long history of interest and work in visual arts and had produced intermedia works throughout his career. He described his approach to these works in an email to Darlene Mitchell, a former colleague from DePaul University [6]:

"I have been composing mainly computer music videos for the past few years. I generally use a fractal generation video software program to prepare animations for the



Figure 3c. Noise Spectrum Layer

video, and use audio sampling software to prepare the music."

This brief statement sums up his process succinctly but not indicate the amount of time and effort devoted to deliver these works. Because of the time-consuming nature of rendering animations, many of these fractal videos use previously, completed works for the audio portion of the project. Several were produced with newly composed audio material. The developmental line of certain projects, like *Il Passiaggio Spaziale*, indicate that the fractal videos seem to allow Winsor to complete his artistic vision [5].

Showers of Flowers was a video that was undertaken shortly before the *Eighth Degree of the Yang Ch'in* Audition sessions and the stereo audio tracks for the video were completed in April 2006. It is believed by file dating that the video was completed and it was several months before he eventually made the alterations to generate the sound track.

The program notes for *Showers of Flowers* provide expanded detail on Winsor's method of generating fractal videos [2].

"I composed video animations using computer software that plotted Fractal graphic still images whose parameters varied over time from one keyframe to the next; this allowed motion from one fractal type to another as well as zooming from one image size to another in a panoramic fashion. Several animation sequences were then rendered to a single video composite along with the digital audio track" (See Figure 4).

The fractal stills were generated in Chaos Pro 3, a highly regarded fractal generation application at that time. The actual process of animating and rendering were accomplished in Adobe Premiere which Winsor mastered in the course of developing his computer music videos. His hard drives contain 34 videos (in a folder aptly named Finished Computer Music Videos). As with the audio disks there are a large number of video work disks which contain the Premiere project files. These have yet to be catalogued but in the case of *Showers of Flowers*, the



Figure 4. Two Layer Fractal Animation

"make" files are located in the same folder as the finished video file. A chronological listing of the files follows:

Showers of Flowers No Audio (3'53", 09/19/2005) Opening four minutes of video.

Untitled 2 (1'04", 09/19/2005) Multilayered panning of fractal images

Untitled4(Best1) (1'04", 09/19/2005) A better version of the above.

ShowersReordedMontage (2 35", 09/20/2005) This is the frenetic "showering" of images that forms the climax of the video (See Figure 5).

Funky Floral Alone (1'19", 09/22/2005) Camera pan of single fractal image.

Funky Flora Cancrizans (1'09", 09/22/2005) Camera pan with an overlay of two fractal images.

Funky Flora Cancrizans2 (1'19", 09/22/2005) A twolayer panning of Funky Floral 1. Winsor gives a hint to the organization of the video panning by using a musical term that refers to a retrograde canon.

Funky Floral Big Montage (3'36', 09/22/2005) Three panning layers giving way to one layer.

Unfolding $3^{\circ}28^{\circ}$ 10/07/2005 Fractal images opening from the middle of the screen towards the outside.



Figure 5. Shower Montage image

The finished .avi file is titled *Showers of Flowers4*. This is a 9'43" version with a 26" leader which includes the opening title information. The actual video comprises 9' 17" and the original audio of *Eighth Degree of the Yang Ch'in* is 10' 43.' The video is 1' 26" shorter than the audio work. There is a session in a folder titled "ShowersAudio MakefromEighthDegree" which also contains three stereo audio files that divide the original audio track into three sections: Part 1a, Part 1b and Part 2. It was hoped that this session would make use of the files for an easy comparison but the session opened up with nothing other than empty tracks.

In order to compare the original audio to the video sound track the video was loaded into a video editing program (Vegas17) and the audio track was separated and saved. The original digital audio, the video soundtrack and the three files that were "divided" from the original sound track were all placed into an Audition session for comparison. The first 4 minutes of audio were the same in the original, the video soundtrack and Part1a. After the opening section abridgment occurs.

PercMotif1 was removed at the 4' location with a reduction of 13". From 5'45" to 7'10" was removed which, of course, included the removal of the James Brown quote. The audio resumes with the "angry" Yang Ch'in entrance which begins the climax of the audio version of the piece.

At this point in the video the Unfolding2 work file is employed which leads to the ShowersReordered Montage2 which the author believes is the visual climax of the work. However, the original "audio piece" climax has been going on for 1' 45" when the elided video of the Showers Montage begins. If one knows both versions of the work, the macro-structure of Eighth Degree of the Yang Ch'in might be more satisfying but Showers of Flowers is effective and the use of the climactic audio material with the unfolding images from the middle of the screen is quite compelling in its own right. The Unfolding2 video and the accompanying audio climax seem to be the sole instance of music coordinating to action. This is facilitated by the removal of the James Brown quote which provided a nexus for coordination of both audio and video components.

5. CONCLUSIONS

This examination of Phil Winsor's *Eighth Degree of the Yang Ch'in* and *Showers of Flowers* provided an insight to the composition procedures and methods used by a contemporary composer whose works includes the techniques associated with analog tape manipulation and the inclusion of the techniques that have evolved with digital signal processing. An examination of "work disks" displays an emphasis on pre-composition (a notion often alien to young composers) where Winsor generated samples and developed hundreds of variants. His own words validate the fact that the structure evolved from the sounds, saying "the materials themselves seemed to dictate their placement in the overall texture." This is much the way Varese envisioned composers sculpting form from the interaction of "forces." The work disks also reveal a progression of expansion as the work moved to completion through a number of iterations.

At the motivic level Winsor uses varied repetition to develop multiple variants of samples with differences that range from slight to exaggerated. Motives are rarely repeated but, when repeated, become important in supplying motivic unity to the macro-structure.

The transition sections all use the same sample material as another indication of motivic unity. The transitions also provide textural variance and dynamic nuance while providing a connective sonic bridge.

Besides the emphasis on motivic integration Winsor maintains other "Euro-centricities" in this work. The use of the Golden Mean, the "expository" statement- and "recapitulatory" restatement of material and the constancy of varied motives throughout the work all indicate his link to traditional Western art music. The opening flourishes that sonically move through space on various channels make an immediate impression on the listener, indicating Winsor's understanding of the importance of gestures to focus the aural attention of the audience.

Winsor's rhythmic treatment at the sample level is quite remarkable given the nature of the master clock in most DAW applications. Building rhythmic expansion and contraction into the samples themselves yields a flexible rhythmic approach that belies the rigidity of the session time clock and is another indication of pre-compositional planning.

The use of the audio from *Eighth Degree of the Yang Ch'in* in *Showers of Flowers* is less satisfying (to the author) if you are familiar with both works. However, the development of a computer music video at this time of Winsor's career is consistent with his emphasis on intermedia work and consistent with his artistic vision.

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